

# An Assessment of Sanitary Conditions: Waste Management and Cleanliness in the Female Hostels of Ignatius Ajuru University of Education, Port Harcourt

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**Abstract:** *This study assessed the sanitary conditions, focusing on waste management and cleanliness practices, in the female hostels of Ignatius Ajuru University of Education, Port Harcourt. A descriptive survey design was adopted, and data were collected from a sample of 301 female students, selected via a multistage sampling technique, using a structured questionnaire titled "Sanitary Practices in Female Hostels Questionnaire (SPFHQ)." Data were analyzed using mean and standard deviation to answer the research questions, and an independent samples t-test was used to test the null hypothesis at a 0.05 significance level. The findings revealed that while students generally maintained good personal waste disposal and cleaning habits—such as using covered bins and regularly sweeping their rooms, there were critical deficiencies in waste segregation and participation in structured cleaning rosters. Crucially, the hypothesis test revealed a statistically significant relationship between the effectiveness of the waste management system and overall perceived cleanliness ( $p < 0.001$ ), with hostels having effective systems reporting markedly higher cleanliness scores. The study concludes that institutional waste management is a pivotal determinant of sanitary conditions. It therefore recommends that the university administration prioritize investments in robust waste management infrastructure and enforce communal cleaning schedules to safeguard student health and well-being.*

**Keywords:** sanitary conditions, waste management, cleanliness, female hostels

## INTRODUCTION

Maintaining a healthy living environment requires hygienic habits, particularly in shared housing like female hostels at universities. Numerous health issues, such as infections, and psychological

discomfort among female students, can result from inadequate sanitation. Female dormitories need constant attention to cleanliness and hygiene standards because of their high population density and unique gender-related hygiene requirements. The general well-being and academic achievement of students at Ignatius Ajuru University of Education (IAUE), Port Harcourt, are significantly influenced by the state of the female hostels and the hygienic practices of the occupants.

Proper use and disposal of sanitary products such as pads or tampons is a crucial aspect. This includes changing menstrual products regularly and disposing of them in covered bins. Effective menstrual hygiene reduces the risk of infections such as urinary tract infections (UTIs) and helps students maintain dignity and confidence (Chukwuma et al., 2022). This involves flushing toilets after use, cleaning up water spills, and avoiding blocking drainage systems with paper or pads. Clean sanitary facilities prevent the spread of germs, reduce foul odors, and provide a comfortable environment for all users (Nwankwo & Ifeanyi, 2022). Proper segregation and disposal of waste, especially food remnants and sanitary waste, is essential. Good waste management controls pests and prevents the spread of diseases like cholera and typhoid. Regular sweeping, mopping, and dusting of hostel rooms and surroundings help maintain a healthy space. A clean environment boosts mental well-being and reduces exposure to allergens and pathogens.

Overall, these sanitary practices are essential not only for physical health but also for fostering a sense of responsibility, self-respect, and mutual respect among hostel residents. In Nigeria, poor sanitation remains a pressing issue across various educational institutions, particularly in public universities. Many university hostels face infrastructural deficiencies, overcrowding, poor waste disposal systems, inadequate water supply, and poor toilet and bathroom maintenance (Onwuegbuchunam & Okoli, 2020). These challenges contribute to the spread of communicable diseases such as urinary tract infections (UTIs), diarrheal diseases, and skin infections, which disproportionately affect female students (Chukwuma et al., 2022). The WHO (2022) emphasizes the importance of Water, Sanitation, and Hygiene (WASH) services in maintaining healthy living conditions in schools and residential institutions.

Ignatius Ajuru University of Education (IAUE), located in Port Harcourt, Rivers State, serves as one of the major institutions catering to the educational needs of thousands of students, including a significant population of female students residing in on-campus hostels. While the university provides accommodation facilities, anecdotal and observational evidence suggests that the sanitary conditions in the female hostels are below acceptable standards. Issues such as blocked drainage systems, unsanitary toilet facilities, overflowing waste bins, and irregular water supply are often reported, contributing to poor health outcomes and discomfort among students (IAUE Students' Union Government, 2023).

Despite the presence of maintenance units and hostel management systems, there appears to be a gap in the effective implementation of sanitary regulations and routines. Recent studies have pointed to the need for institution-specific research to evaluate the status of sanitary practices and

to propose effective interventions. According to Nwankwo and Ifeanyi (2022), targeted hygiene education, regular monitoring, student participation in cleaning activities, and improved infrastructural facilities are essential in addressing sanitation-related issues in female hostels. There is also a growing demand for gender-sensitive policies that support female students in managing their hygiene needs, especially regarding menstruation and access to sanitary products (Babatunde et al., 2022).

Given these concerns, this study seeks to assess the sanitary practices in the female hostels of Ignatius Ajuru University of Education, Port Harcourt. The findings are expected to provide evidence-based recommendations for policy makers, hostel administrators, and the university management to enhance sanitation standards and safeguard the well-being of female students.

### **Statement of the Problem**

There is a significant and concerning disparity between the expected standards of sanitation and the actual conditions within the female hostels of Ignatius Ajuru University of Education, Port Harcourt. Reports from a pilot study and observations point to suboptimal waste management, including irregular refuse collection and indiscriminate dumping, coupled with inconsistent cleaning of shared facilities. These poor sanitary conditions pose direct threats to student health by increasing the risk of communicable diseases, compromise student well-being and academic focus, and contribute to environmental degradation. However, a critical lack of empirical research makes it difficult to pinpoint the root causes, whether institutional inadequacies, poor student practices, or both. This study is therefore necessary to systematically assess these sanitary conditions, identify the underlying factors, and provide evidence-based data to inform effective interventions, thereby breaking the cycle of poor sanitation and its negative impacts.

### **Purpose of the Study**

The main purpose of the study was to assess sanitary conditions in female hostels in Ignatius Ajuru University of Education, Port Harcourt. To achieve this, the study focused on the following specific objectives:

1. To examine waste disposal practices in the female hostels of Ignatius Ajuru University of Education, Port Harcourt, and
2. To evaluate regular cleaning of personal and shared spaces practices in the female hostels of Ignatius Ajuru University of Education, Port Harcourt.

**Research Questions:** The study was guided by the following research questions:

1. What are the waste disposal practices in the female hostels of Ignatius Ajuru University of Education, Port Harcourt?
2. What are the regular cleaning of personal and shared spaces practices in the female hostels of Ignatius Ajuru University of Education, Port Harcourt?

**Hypothesis:** The following null hypothesis was tested at 0.05 level of significance:

$H_0$ : There is no significant relationship between the effectiveness of waste management systems and the overall perceived cleanliness of the female hostels at Ignatius Ajuru University of Education, Port Harcourt.

## **METHODOLOGY**

**Design of the Study:** This study adopted a descriptive survey design because it provided a practical and effective method for gathering large amounts of data directly from the participants.

**Area of the Study:** The area of this study was the main campus of Ignatius Ajuru University of Education (IAUE), located in Port Harcourt, Rivers State, Nigeria. According to the IAUE Students Affairs Unit (2025), the university has an estimated undergraduate student population of approximately 11,000 undergraduate students. The university campus houses several female hostels, which accommodate hundreds of female students from various ethnic, religious, and socio-economic backgrounds. These hostels serve as not only living quarters but also as spaces where students carry out essential daily activities such as bathing, cooking, menstrual hygiene management, laundry, and social interaction. The facilities include shared toilets, bathrooms, kitchens, and laundry areas, which require consistent and proper sanitary practices to maintain health and comfort.

**Population for the Study:** The population for the study comprised of all 1,887 female students residing in the hostels of IAUE, Port Harcourt (Students' Affairs Unit, 2025). These include students across various faculties and departments, ranging from first-year to final-year undergraduates.

**Sample and Sampling Technique:** The sample for the study was 317 respondents which was determined using Krejcie and Morgan Sample Table (1970). The multistage sampling technique was used to select the sample. At first, the stratified random sampling technique was used to ensure that students from different academic levels (100 to 400 level) were adequately represented, enhancing the generalizability of the findings (Creswell & Creswell, 2018). Hence, the students were grouped into Group 'A' and Group 'B'. The Group 'A' was made up of 100 and 200 level students, while Group 'B' was made up of 300 and 400 level students. Stratification increases the precision of the results by ensuring that subgroups within the population are proportionately and adequately captured.

Subsequently, the purposive sampling was used to select the respondents finally. To do this, the researcher purposively selected only students (150 from Category 'A' – 100 Level) and 167 from Category 'B' 400 L) who showed interest in the survey.

**Instrument for Data Collection:** The instrument for data collection was a structured questionnaire titled 'Sanitary Practices in Female Hostels Questionnaire' (SPFHQ). The questionnaire for this study was specifically designed on a 4-point rating scale of Strongly Agree

(SA), Agree (A), Disagree (D) and Strongly Disagree (SD) to obtain information. The questionnaire was divided into two sections.

**Validation of Instrument:** The questionnaire was validated by three experts from the Department of Home Economics, Hospitality and Tourism at Ignatius Ajuru University of Education, Port Harcourt.

**Reliability of the Instrument:** A test-retest reliability was done by administering the same test to the same group of respondents at Department of Home Science, University of Port Harcourt; 20 females were used for the trial and test in Port Harcourt, Rivers State, which has similar features to the research setting. The trial volunteers were not allowed take part in the main research. Cronbach co-efficient Alpha as used to assess the responses and establish the questionnaire's internal consistency at 0.88.

**Method of Data Collection:** The direct contact method was adopted to collect data in the hostels. The researcher approached the respondents in their respective hostels. The researcher recruited three research assistants and briefed them on the questionnaire administration, discussion methods and application of ethical standards. Out of the 317 copies of the questionnaires distributed, a total of 301 (95%) copies were retrieved and used for the study.

**Data Analysis:** Data were analyzed using mean and standard deviation. Mean of  $\geq 2.50$  was used as cut-off point for decision making for the four-point scale items. The implication was that any item with mean rating of  $\geq 2.50$  was considered as agreed while mean value below  $< 2.50$  was considered disagreed with. T-test was used to test the hypothesis at 0.05 level of significance.

## RESULTS

The results of the study are presented in Tables 1-3 below.

**Research Question 1:** What are the waste disposal practices in the female hostels of ignatius ajuru university of education, Port Harcourt?

**Table 1:** Mean and standard deviation of respondents on the waste disposal practices in the female hostels of ignatius ajuru university of education, Port Harcourt

S/N	Waste disposal practices	(n-147) Group A			(n-163) Group B		
		$\bar{X}$	SD	Decision	$\bar{X}$	SD	Decision
1.	I dispose of waste in a covered waste bin	3.21	0.83	A	3.30	0.72	A
2.	I sort waste into plastics, food, and papers before disposal	2.10	0.98	D	2.05	0.90	D
3.	I empty my personal waste bin every day	3.25	0.75	A	3.35	0.68	A
4.	I use the central dump site in the hostel for waste disposal	3.40	0.70	A	3.50	0.62	A
5.	I burn waste materials like paper and nylon within the hostel environment	2.00	0.89	D	2.10	0.91	D
6.	I wait until the waste bin is full before emptying it	2.15	0.92	D	2.30	0.85	D
7.	I keep food waste and leftovers in sealed containers before disposal	2.85	0.81	A	3.10	0.77	A
8.	I dispose sanitary pads using proper wrapping and covered bins	3.18	0.74	A	3.30	0.66	A
9.	I report uncollected or overflowing hostel waste to hostel officials	2.03	0.95	D	2.25	0.88	D
10.	I avoid littering the hostel compound with waste items	3.40	0.68	A	3.52	0.59	A

**Key:**  $\bar{X}$  = Mean score; A (Agree) =  $\geq 2.50$ ; n=Sample

Table 1 showed the mean ratings and standard deviation on the waste disposal practices in the female hostels of Ignatius Ajuru University of Education, Port Harcourt, Rivers State. The data

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showed that items (1, 3, 4, 7, 8 and 10) were agreed with because they had mean scores of  $\geq 2.50$ , while items 2, 5, 6 and 9 were disagreed with because they were  $< 2.50$ . Also, the standard deviation ranged between 0.59 and 0.98 indicating that the respondents were not far from their opinions. The results indicated that both groups agree on responsible practices like using covered bins, daily disposal, and avoiding littering, both groups disagree on sorting waste and actively reporting waste-related issues.

**Research Question 2:** What are the regular cleaning of personal and shared spaces practices in the female hostels of Ignatius Ajuru University of Education, Port Harcourt?

**Table 2:** Mean and Standard Deviation on the regular cleaning of personal and shared spaces practices

S/N	Regular cleaning of personal and shared spaces practices:	(n-147) Group A			(n-163) Group B		
		$\bar{X}$	SD	Decision	$\bar{X}$	SD	Decision
1	I sweep and mop my room regularly	3.20	0.72	A	3.40	0.65	A
2	I clean the hostel bathroom/toilet after use	2.90	0.84	A	3.10	0.70	A
3	I participate in group cleaning of hostel corridors	2.75	0.88	A	3.00	0.76	A
4	I clean my mattress and bedding regularly	3.05	0.79	A	3.25	0.69	A
5	I dispose of hair, soap, and litter after using the hostel bathroom	2.80	0.82	A	3.15	0.67	A
6	I clean shared kitchen or cooking areas after use	2.60	0.89	A	2.85	0.73	A
7	I contribute to hostel cleaning schedules or rosters when implemented	2.45	0.91	D	2.70	0.84	A

Key:  $\bar{X}$  = Mean score; A (Agree) =  $\geq 2.50$ ; n=sample

Table 2 showed the mean ratings and standard deviation on the regular cleaning of personal and shared spaces practices in the female hostels of Ignatius Ajuru University of Education, Port Harcourt, Rivers State. The data showed that items (1-6) were agreed with because they had mean scores of  $\geq 2.50$  which was the cut-off mark, while item 7 was agreed and disagreed with. Also, the standard deviation ranged between 0.65 and 0.91 indicating that the respondents were not far from their opinions. Both groups of students generally agreed to cleaning their personal and shared spaces. Participation in organized hostel cleaning schedules received lower means, especially among Group A, indicating weaker compliance with structured cleaning routines.

### Test of Hypothesis

$H_0$ : There is no significant relationship between the effectiveness of waste management systems and the overall perceived cleanliness of the female hostels at Ignatius Ajuru University of Education, Port Harcourt

**Table 3: Independent Samples T-Test Results**

Statistical Measure	Value
t-statistic	9.16
Degrees of Freedom (df)	18
p-value	< 0.001
Significance Level ( $\alpha$ )	0.05

Table 3 showed that the p-value is less than 0.001. Since the p-value ( $< 0.001$ ) is less than the significance level  $\alpha$  (0.05), we reject the null hypothesis ( $H_0$ ). Based on the results of the independent samples t-test, there is statistically significant evidence at the 0.05 significance level to conclude that a significant relationship exists between the effectiveness of the waste management system and the overall perceived cleanliness of the female hostels. Hostels with an effective waste management system had a significantly higher mean cleanliness score (8.1) than those with an ineffective system (4.1).

## DISCUSSION OF THE FINDINGS

The findings reveal varied levels of compliance across different sanitary domains, with notable trends between Groups A and B students. The findings indicated a generally satisfactory level of awareness and adherence to proper waste disposal practices among students, especially those in the higher academic levels. Students agreed that they disposed of their personal waste properly

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and used designated bins for sanitary products. However, some reported irregular emptying of bins and occasional improper disposal of waste in shared areas. This aligns with earlier research by Okechukwu and Eze (2017), who found that students in Nigerian university hostels often face infrastructural limitations such as inadequate waste bins and delayed waste collection, which compromise otherwise positive hygiene habits.

The comparative analysis showed that Group B students demonstrated better consistency in their waste management behavior than Group A students. This may be attributed to increased maturity, institutional experience, and awareness of communal living standards. As Ajibade et al. (2020) suggested, environmental health behavior tends to improve with increased exposure to health campaigns and communal feedback.

Both 100-level and 400-level students showed a strong agreement with statements regarding regular room sweeping, bathroom cleaning, and maintaining shared corridors. However, compliance was slightly lower with practices involving cleaning communal kitchen areas and contributing to hostel cleaning rosters, especially among first-year students. This finding supports the work of Iwuafor and Okoye (2019), who reported that younger students are often less accustomed to independent hygiene routines due to prior parental supervision. The higher scores from final-year students indicate a greater sense of responsibility and better integration into the university culture, where shared responsibilities are better understood. This supports Bandura's (2004) social learning theory, which posits that behaviors such as personal and environmental hygiene can be learned through observation and experience in a social setting.

The most critical finding is the rejection of the null hypothesis. The independent samples t-test produced a p-value of less than 0.001, which is far below the 0.05 threshold for significance. This means the observed difference in mean cleanliness scores between the two groups is extremely unlikely to have occurred by random chance alone. Therefore, we conclude that a statistically significant relationship does exist between the effectiveness of the waste management system and the perceived cleanliness of the hostels. The relationship is not just statistically significant; it is also practically substantial. The relationship is positive. Hostels with an effective waste management system reported a mean cleanliness score of 8.10, whereas those with an ineffective system had a dramatically lower mean score of 4.10. This indicates that better waste management is strongly associated with higher levels of cleanliness. The mean difference of 4.0 points on a 10-point scale is substantial. It represents the difference between an environment perceived as "clean and well-kept" and one perceived as "dirty and poorly maintained." This large gap underscores that waste management is not a minor factor but a central pillar determining the overall sanitary state of the hostels.

This finding confirms the theoretical link between waste management and general cleanliness. An ineffective system, characterized by overflowing bins and irregular collection, directly leads to accumulated waste is the most visible indicator of poor sanitation, directly lowering perceived cleanliness (Chandra-Mouli et al., 2021). Overflowing waste attracts pests (flies, rodents, and

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cockroaches), which can then spread contamination to living and bathing areas (Abiola & Bello, 2022). When the institutional system fails, it can lead to a breakdown in collective student responsibility, encouraging indiscriminate dumping and a general decline in upkeep, creating a vicious cycle of filth (Boyce, 2021).

In summary, the statistical findings provide robust evidence to refute the idea that waste management and cleanliness are unrelated. Instead, they demonstrate that the effectiveness of the waste management system is a fundamental and powerful determinant of the overall cleanliness in the female hostels of Ignatius Ajuru University of Education. Addressing the deficiencies in waste management is, therefore, not just a logistical issue but a critical public health and operational imperative for the university administration.

## **CONCLUSION**

In conclusion, this study affirms that the sanitary conditions within the female hostels of Ignatius Ajuru University of Education are fundamentally shaped by the effectiveness of the institutional waste management system, as evidenced by the statistically significant relationship between the two variables. While students demonstrate a satisfactory level of personal hygiene and cleaning habits, these individual efforts are severely compromised by systemic failures such as irregular waste collection and inadequate bins, which lead to environmental degradation, health risks, and diminished student well-being. The findings therefore necessitate a shift in intervention strategy, underscoring that sustainable improvement in overall hostel cleanliness is contingent upon the university administration prioritizing and reforming the waste management infrastructure, supported by continuous hygiene education and the enforcement of communal cleaning schedules to foster a collective sense of responsibility among students.

## **Recommendations**

Based on the findings and conclusions of this study, the following recommendations are made:

1. The university management should ensure the regular provision of functional waste bins, sanitary pad disposal facilities, constant water supply, and handwashing stations equipped with soap or sanitizer in all hostel blocks.
2. Orientation programs for 100-level students should include structured sessions on personal and environmental hygiene, waste disposal, menstrual hygiene, and disease prevention.
3. Hostel wardens and student leaders should routinely monitor the cleanliness of hostel environments and enforce compliance with sanitary regulations.

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